LEHIGH UNIVERSITY

A Guide to Composting at Lehigh University

Source: memories.lehigh.edu/node/14

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Table of Contents

Introduction

Source: https://www1.lehigh.edu/community/contact

Lehigh University is committed to becoming a model university in sustainable composting. This paper will discuss the challenges that the university will face as it launches a pre-consumer composting initiative. by building off of previous student ideas such as Maria S. Cohen's "Mapping Lehigh University's Campus Metabolism," and utilizing campus resources such as facilities and dining services. Additionally, potential solutions to these challenges will be introduced. Lehigh faces two central challenges in terms of composting: community challenges such as educating the student body on the importance of sustainability and operational challenges such as ensuring there is enough space to contain all of the compost on campus. Before discussing the specifics of these challenges, however, it is important to understand what sustainability is, why it is important, and the history and future of sustainability at Lehigh.

Definition of Sustainability

In 1987, the United Nations issued their "Report of the World Commission on Environment and Development: Our Common Future." In this report, the UN defines sustainable development as, "development that meets the needs of the present without compromising the ability of future generations to meet their own needs" ("Sustainable"). This is significant as it illustrates the importance of sustainable action in alleviating inequalities for current generations and future generations (United Nations). Merriam-Webster dictionary defines sustainability as: "1: capable of being sustained. 2a: of, relating to, or being a method of harvesting or using a resource so that the resource is not depleted or permanently damaged" ("Sustainability"). In a general sense, sustainability means ensuring responsible practices that promote a long-term healthy ecosystem. The Association for the Advancement of Sustainability in Higher Education (AASHE) understands sustainability to encompass three sectors: social, environmental, and economic ("What"). The Merriam-Webster and AASHE definitions of sustainability provide a solid diagnostic framework to approach sustainability, but there is another component that must be considered: the cultural or educational transformation of the institution. "Universities in Transition: Overcoming Barriers and Creating Pathways for Sustainability," defines sustainability as a vague term that requires a targeted and intentional shift in culture (Sanchez). Whereas the other definitions provide a starting point, it is critical that any changes, such as recycling or composting, be accompanied by a mindset change so that there is a lasting impact.

With these definitions in mind, a clearer picture of sustainability appears. Sustainability is both a physical change in terms of how resources are allocated or used as well as a cultural change in terms of how people think about and interact with both the built and natural environment. Both changes are necessary for long-term social, environmental, and economic equity. This means making decisions like minimizing greenhouse gas emissions, as well as ensuring gender equality, and providing financial resources to students.

History of Sustainability at Lehigh

Lehigh University's first Sustainability Plan was released in 2012, a four-year plan that would run until 2016. Goals for the plan included things like creating a campus-wide composting program and to, "ensure that all pre and post-consumer waste in dining halls is composted by 2015 with an expansion to eateries by 2020" (2012 Campus Sustainability Plan). The University's next Sustainability plan, released in 2016 and running through 2020, again included objectives such as, "divert all food waste from trash stream" (2020 Campus Sustainability Plan). Although these goals have yet to be realized, their inclusion in previous sustainability plans dating back to 2012 shows that the University is committed to reducing waste and composting. On the other hand, these goals going unsolved also goes to show there are significant challenges that the campus community must work together to solve.

In 2019 before releasing the 2020-2030 sustainability plan, Lehigh released a 2019 Sustainability Progress Report Scorecard that describes significant strides across the board for sustainability. For example, the University highlighted the importance of sustainability by hosting a workshop for students and faculty meant to infuse the campus with sustainability everywhere: "Lehigh held a day-long workshop on integrating sustainability in the curriculum,

which was open to faculty in all four colleges. Two additional 1-hour workshops have been held. The LSC Education Subcommittee will hold a similar workshop for faculty in Spring 2020 and beyond," and, "100% of entering students are provided an opportunity in orientation activities and programming that prominently include sustainability" (2019 Progress Report).

Despite these strides in sustainability, there is still significant work to be done in other areas. For example, a stated operations goal for the University was to "divert all food waste from trash stream," by 2020. However, the 2019 Sustainability Progress Report shows that Lehigh continues to generate a significant amount of food waste. The University's next steps to reduce food waste are as follows, "LU Facilities and the Office of Sustainability are working on a pre-consumer composting pilot for Spring 2020. This pilot will help inform the potential expansion of composting across campus for both pre-consumer and post-consumer materials" (2019 Progress Report).

Lehigh has even more work to do when it comes to the University's goal to, "increase recyclables by 10 percent over 2012 baseline." In the Progress Report, Lehigh states, "due to global shifts in recycling markets, it has put pressure on domestic facilities to reduce contamination in the recycling stream. The accepted contamination rate went from 10 percent to .05 percent. Lehigh continues to refine its recycling process and messaging despite these global challenges" (2019 Progress Report).

For a long time, Lehigh University has demonstrated a commitment to being leaders in sustainability and improving the economic, social, and environmental status of campus and the surrounding community. Still, the university has a long way to go to accomplish their lofty goals and questions still exist as far as how to continue with implementation of their sustainability plans.

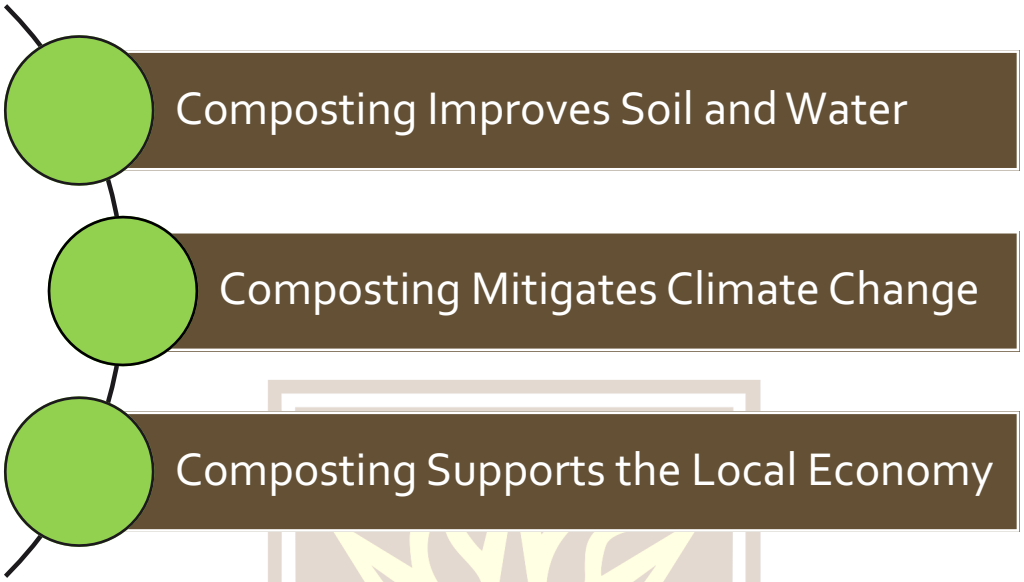
2020 Sustainability Plan

Lehigh has some organizations on campus that address these gaps in sustainability: the Brown and White informs the community of persisting issues such as managing the transition to online learning due to the COVID-19 pandemic; the Center for Gender Equity works to highlight gender equity issues on campus such as teaching what consent is by hosting events and workshops; and Eco-Reps highlights the environmental issues including recycling contamination faced on campus while acting to increase the University's environmental sustainability. In order to more holistically address sustainability, however, the University is working on a 2020 Campus Sustainability Plan that is set to run through 2030.

Lehigh's 2020 Campus Sustainability Plan includes four parts: Academics and Educational Experience, Campus and Community Engagement, Operations, and Planning and Administration. The goals set out in the plan range from reaching 100% of the student body through peer-to-peer sustainability outreach programs, joining the Fair Labor Association and/or Workers' Rights Consortium as an institutional member, and reducing emissions by 25% with respect to a 2007 baseline (2020 Sustainability Plan).

Lehigh's composting goals fall into the University's operational goals for waste. Specifically, the University intends to, "Create and implement a waste management plan to minimize waste generated on campus by 10% over 2010 baseline," "increase recyclables by 10% over 2012 baseline," and, "divert all food waste from the trash stream" (2020 Sustainability Plan). Although Lehigh has a clear set of outlined goals to reduce waste and improve operational efficiency, in order to effectively achieve these goals, clear and specific benchmarks must be established.

The Role of Composting in Sustainability



A successful composting program at Lehigh University would do more than just reduce food waste; it would make the Lehigh University community a better place in countless ways. Composting is relevant to all three pillars of sustainability: social, economic, and environmental. Therefore, implementing a composting initiative at Lehigh would have widespread benefits to the university and the surrounding community.

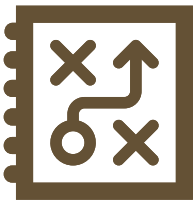
The social benefits of composting are far reaching and have the potential to play a large role in making Lehigh more equitable for different peoples on campus. For starters, according to the Institute for Local Self-Reliance, "compost products tend to be used locally" (Platt). This means that by composting, Lehigh is also supporting the immediate and surrounding community by creating new opportunities to utilize the compost that is generated on campus. Additionally, composting provides a major educational opportunity to teach about the lifecycle. Compost is an essential example of the natural life cycle– it demonstrates that rotting food can turn into nutrient rich soil. Therefore, observing the composting process provides a great opportunity to witness firsthand how death and decay fuel life. This is an

important lesson when striving for social equity as it teaches people about the interconnectedness between life and death (Lights).

In addition to creating social benefits, composting creates many economic opportunities. For one, compost can help local agriculture diversify and expand operations. Compost increases crop yield by replenishing soil with nutrients without the need for expensive and often harmful fertilizers. This in turn means that farmers can invest more money into growing their operations (Platt). Additionally, composting provides the opportunity to save money in the form of landfill costs. For example, "Middlebury College in Middlebury, Vermont initiated a food waste composting program in 1993. Middlebury College used to haul the food scraps offsite, but now have a site on campus where they compost 90 percent of the food waste generated or 370 tons in 2011. In 2011, Middlebury saved over $100,000 in landfill fees by recycling and composting" ("Reducing"). Similarly, a composting program at Lehigh University presents the opportunity to save significantly on landfill fees and potentially waste transportation fees.

The most obvious benefits to composting fall into the category of environmental benefits. The most frequently cited environmental benefit of composting is the reduction of methane that is generated in landfills. As waste undergoes anaerobic decomposition in landfills, meaning the waste is broken down by oxygen-less microbes, methane, a potent greenhouse gas, is released into the atmosphere. Composting, on the other hand, undergoes aerobic decomposition, a process that involves microbes that use oxygen. Aerobic decomposition prevents the release of methane ("Composting"). Additional environmental benefits of composting include the potential to aid in different types of land restoration by improving soil quality, sequestering carbon, and even enhancing water retention in soils ("Reducing").

Composting Challenges



During an interview with Lauren Sleeger, manager of Rathbone Dining Hall, she brought to attention several composting-related challenges. The first, which would fall into the category of a community challenge, was the issue of the placement of composting. For example, many compost processing companies will not accept compost if it is overly contaminated with products that cannot be composted. This further complicates the University composting system, as the students and staff need to be educated on proper composting practices to ensure the compost does not become contaminated. Another community challenge that exists is the question as to whether the University should prioritize waste reduction over waste diversion. For example, should significant resources be dedicated to eliminating single-use plastics on campus or towards a composting initiative? These are questions that University leadership and the students must address.

In addition to community challenges, there are operational issues such as composting containers taking up a large amount of space, and the potential for the containers to emit foul odors, which poses a threat to a successful composting program at Lehigh University. An additional issue that Sleeger brought to attention, which stood out in particular, is “finding a partner that would accept our compost and that is what caused us to stop composting in the first place. All of the compost in the area was sent to a facility in Wilmington, DE, but all of the contamination and the complaining from the neighbors caused the facility to shut down. This

had a massive impact on the tri-state area." As Sleeger points out, this is not Lehigh's first attempt at a composting program. The first attempt failed due to the composting facility shutting down in Delaware.

As Lehigh sets out to establish its Sustainability Strategic Plan for 2020-2030, the University has established a timeline to address the sustainability issues that are deemed important through campus outreach and previously stated goals. The process of creating a new sustainability plan kicked off in fall 2019 with the beginning of a yearlong processing plan that includes assessing the current state of sustainability on Lehigh's campus and setting goals for the new plan as well as developing metrics to monitor those goals. By fall 2020, the University will release the new plan to campus and will begin developing an implementation strategy by winter 2021. If this plan is to be successful, especially in the area of composting, clear answers must be laid out for all of the aforementioned challenges. Furthermore, new challenges will inevitably arise and the only way to face these challenges will be if there is a well-structured plan in place.

Composting Solutions

Short Term Goals	Medium Term Goals	Long Term Goals
• Begin pre-consumer composting in Lower Cort • Improve composting awareness • Improve free food outreach	• Introduce post-consumer composting • Maintain other sustainability efforts including recycling	• Composting bin with every recycling bin on campus • Post-consumer composting in dining halls and eateries

To successfully implement Lehigh's 2020-2030 sustainability plan and composting initiative, there must be well outlined steps that will be taken to solve the challenges present. Lehigh is aware of this fact and has already taken steps to ensure that the plan is successful. For example, the framework for Lehigh's new sustainability plan is clearly outlined: First, the plan will be broken into six categories: Climate Action, Campus Operations, Educational Experience, Culture and Engagement, Health and Wellness, and Leadership. Additionally, each of the goals established in the new sustainability plan will be tied to the United Nations Sustainable

Development Goals (SDGs). This reflects not only Lehigh's relationship with the United Nations as the sixth university in the world to gain Non-Governmental Organization status, it also demonstrates the Universities dedication towards accomplishing goals that will pave a better future for all.

Lehigh has also placed a priority on gaining input from the campus community to formulate the next Sustainability Plan. The University has accomplished this through Alumni Advisory Council Meetings as well as Campus Sustainability Strategic Planning Workshops. The first of two Campus Sustainability Strategic Planning Workshops was focused on understanding Lehigh's progress towards sustainability goals. Participants were asked questions including: What initially comes to mind when you hear the word sustainability? How does reading AASHE's framework change how you think about sustainability? And what does a sustainable Lehigh look like? These questions help the University identify exactly what it is they are trying to accomplish in terms of sustainability, and more specifically, how these goals can be attained on campus.

The second Campus Sustainability Strategic Planning Workshop focused on crafting a sustainability strategy and goals. This session included brainstorming what can be done in all of the different categories of sustainability at Lehigh. In the category of waste, participants of the strategic planning workshop identified the following as areas that should be addressed in the University's next sustainability plan:

"Short term:

- Begin a pre-consumer composting program in Lower Cort
- Expand pre-consumer composting program to eateries and restaurants on campus

- Kick off post-consumer composting at specific events, particularly those that are catered and/or small scale
- Improve the free food outreach - increase awareness of free food GroupMe and make it more accessible to students on campus
- Improve composting education
- Improve visibility of electronics recycling on campus

Medium term:

- Reuse oil from dining halls for vehicles
- Post-consumer composting at dining halls

Long term:

- Composting bin with every recycling bin on campus
- Post-consumer composting at dining halls and eateries on campus."

Breaking sustainability goals down into more manageable areas is a great tactic for tackling sustainability issues, however, the associated challenges must also be specifically addressed. Some examination of these challenges and outside-the-box thinking can greatly assist in breaking these challenges down. A breakdown of some potential solutions for different challenges are shown in Table 1, Composting challenges & possible solutions.

Source: https://purepng.com/public/uploads/large/purepng.com-tree-skylinenaturetreegreensummer-8315240022953ulot.png

OPERATIONAL CHALLENGES	POSSIBLE SOLUTIONS
Lack of space to contain compost in dining halls	• Purchase or build shelves to maximize vertical space to contain compost
Compost freezes in winter	• Purchase or build large insulated compost containers • Store compost in garage or shed
Compost smells bad	• Keep compost in sealed containers
COMMUNITY CHALLENGES	**POSSIBLE SOLUTIONS**
Overly contaminated compost	• Create infographics clearly showing what can and cannot be composted • Include composting education in orientation programming • Utilize Eco-Reps in dining halls to ensure composting is done correctly (Similar fashion to Eco-Reps' Game-Day Challenge event) • Ensure education of staff and make sure resources are readily available to answer frequently asked questions • Break waste stream down into more categories i.e.: plastics, metals & glass, paper recycling, corrugated cardboard, compost, and landfill only • Ensure dining location only serve food that can be composted
Waste reduction over waste diversion	• The University should dedicate resources to both waste reduction and waste diversion simultaneously • Eliminating plastic on campus poses a greater logistical challenge than composting and therefore composting should be a greater priority
Students not caring	• Simplify composting and recycling by breaking down waste streams into more categories (see overly contaminated composting) • Ensure that recycling and composting education are included in first year orientation, especially with interactive activities that keep students engaged and teach them proper waste management techniques • Initiatives that involve use of compost for studies/community outreach

Table 1. Composting challenges & possible solutions

Model Schools in Sustainability

From tracking food waste to spreading articles on the importance of sustainability, schools everywhere are taking a multi-pronged approach to becoming more sustainable (Zappala). Along with this multi-pronged approach to sustainability, there is a growing consensus that going "zero waste" should be a top priority when it comes to managing waste (Stanford). As Lehigh University plans their next sustainability plan to carry the university through 2030, particular emphasis should be placed on reducing waste as much as possible and Lehigh will have to pay careful attention to how other universities are tackling the challenges associated with eliminating waste on campus. This section will take a closer look at how Stanford University is attempting to go zero waste and how other universities are managing their dining hall food waste.

Stanford University's waste diversion program dates back to the 1970s. Today, their program has managed to increase waste diversion at Stanford University to 64%. By 2030, Stanford intends to be at "zero waste", that is, send 10% or less waste to a landfill (Stanford). In order to accomplish these lofty goals, Stanford has already accomplished tasks including, "created a detailed plan to collect and analyze the data associated with Stanford's waste portfolio and propose solutions toward reaching zero waste. The planning included developing an extensive model, conducting a detailed waste characterization, and utilizing third-party peer reviews. The process took a detailed review of the sources of waste by category, coupled with proposed diversion solutions and costs that align with the sustainable materials management and circular economy principles. Findings revealed that the university can increase

its waste diversion to 90% by 2030 by maintaining the best practices of today and finding efficiencies and introducing new solutions for the coming decade." Similarly, if Lehigh is to prioritize its waste diversion, the university should do things including developing an extensive model and reaching out to leaders in the field of sustainability to conduct a third-party peer review. Fortunately, Lehigh has a solid start in some of these areas. For example, "a comprehensive Waste Management Plan and Policy was created in 2016. It established requirements for master data tracking system for 30+ waste/recycling streams." Unfortunately, despite this mater data tracking system, "Lehigh has not been able to reduce waste by 10 percent" (Campus).

Following initial assessments, Stanford University established grouped reduction options to help them achieve their "zero waste" goal, as shown in Table 2, Diversion rate pathway chart, shown on the next page.

In accordance with Stanford's grouped reduction options, Lehigh University will be able to greatly reduce their waste diversion by mapping out the areas in which they are capable of reducing waste on campus. For example, by expanding food rescue and donation programs in ways including making the free food GroupMe more accessible, Lehigh could see a significant reduction in food waste. Additionally, expanding recycling infrastructure and related programs by increasing the number of waste streams on campus from just recycling and trash to including different types of recycling such as cardboard, plastic and glass, and paper, would decrease the amount of contamination in recycling streams thereby ensuring that recycling does not end up in a landfill.

Stanford is certainly a model school when it comes to topics of sustainability, however, it is not the only model school. Universities including Princeton and Northwestern are also model schools that Lehigh should look to. One intriguing initiative at Princeton University is the S.C.R.A.P. Lab, an initiative in which, "an on-site food scraps composting demonstration project to support the sustainability goals and research and education missions of Princeton University." Lehigh could eventually implement similar initiatives when the composting program is off the ground.

Grouped Reduction Options	Cumulative Percent Diverted	Estimated Completion year
Current programs	64%	2020
Enhanced reuse programs	65%	2022
Improved recycling & composting in Stanford cafes	71%	2023
Convert to single stream recycling	73%	2025
Expanded recycling infrastructure & programs	76%	2026
Athletics event recycling & composting	77%	2027
Food rescue and donation programs	78%	2028
Procurement programs	82%	2029
Expanded composting programs	86%	2030
Expand common area waste stations in offices	90%	2030
Lab recycling & composting programs	91%	2030
Expanded R&DE infrastructure & programs	93%	2030

Table 2. Stanford University diversion rate pathway chart

Automatic Composters

In “Mapping Lehigh University’s Campus Metabolism,” Maria S. Cohen breaks down Lehigh into a system of inputs and outputs. The inputs consist of energy, food, water, and materials; the outputs consist of solid waste, wastewater, recycling, and emissions; the system boundary is Lehigh’s campus. Cohen notes in her report that biodigesters provide a way to close many of sustainability loops in Lehigh’s system. Automatic composters, or biodigesters, present a great opportunity to enhance sustainability with few of the challenges associated with a traditional composting program such as sanitation or education concerns.

Rathbone Dining Hall already uses a biodigester to improve its sustainability and minimize food waste. Rathbone uses the EnviroPure System which uses flowing potable water to take food to a digester where a bio-mix breaks down the material. The only byproduct is grey water which then returns into the sewer system to be treated. Although biodigesters take up a lot of space with their steel digester container and have expensive startup costs, they provide a great number of potential sustainability benefits. When speaking with Laruen Sleeger, manager of Rathbone Dining Hall, she noted that, “the greywater from the EnviroPure system can be used for landscaping purposes.” Although this is not the direction the university is currently taking with the greywater from the EnviroPure System, it demonstrates the variety of ways in which the system can contribute to efforts in sustainability. Using the greywater from the EnviroPure waste digestor is a great future sustainability goal for Lehigh to tackle.

Sleeger did not stop there in pointing out the benefits of biodigester systems, as she spoke of biodigesters' ability to minimize labor needs and accidents. When using the biodigester, the only user interaction is wiping the remaining contents from a plate into a pipe with flowing water. The combination of bio-mix and filters does the rest. The simplicity of the system for the user means there is little potential for accident or injury. A pre-consumer composting program, on the other hand, requires more handling of waste. This in turn means taking time and money to further educate employees and increasing sanitation concerns.

The biodigester even pays itself off overtime, eliminating waste removal and transportation costs. According to EnviroPure, “The cost of sending your facility’s food waste to the landfill can be staggering. In fact, the total impact on your bottom line can top nearly $200 per ton when you factor in tipping fees, fuel surcharges, bin rentals and taxes. By eliminating those pickup and hauling costs, EnviroPure can save the typical facility tens of thousands of dollars annually” (“More Effective”).

Although biodigesters provide a great opportunity to limit waste generated on campus, the best approach to enhancing the university's sustainability would be to implement biodigesters in conjunction with composting programs. One reason for a dual approach is that traditional composting offers benefits in terms of what can be done with the soil that is produced. An additional reason for a dual approach is that traditional composting has an important educational component, which is it teaches people a lifelong skill that can help them achieve a sustainable lifestyle.

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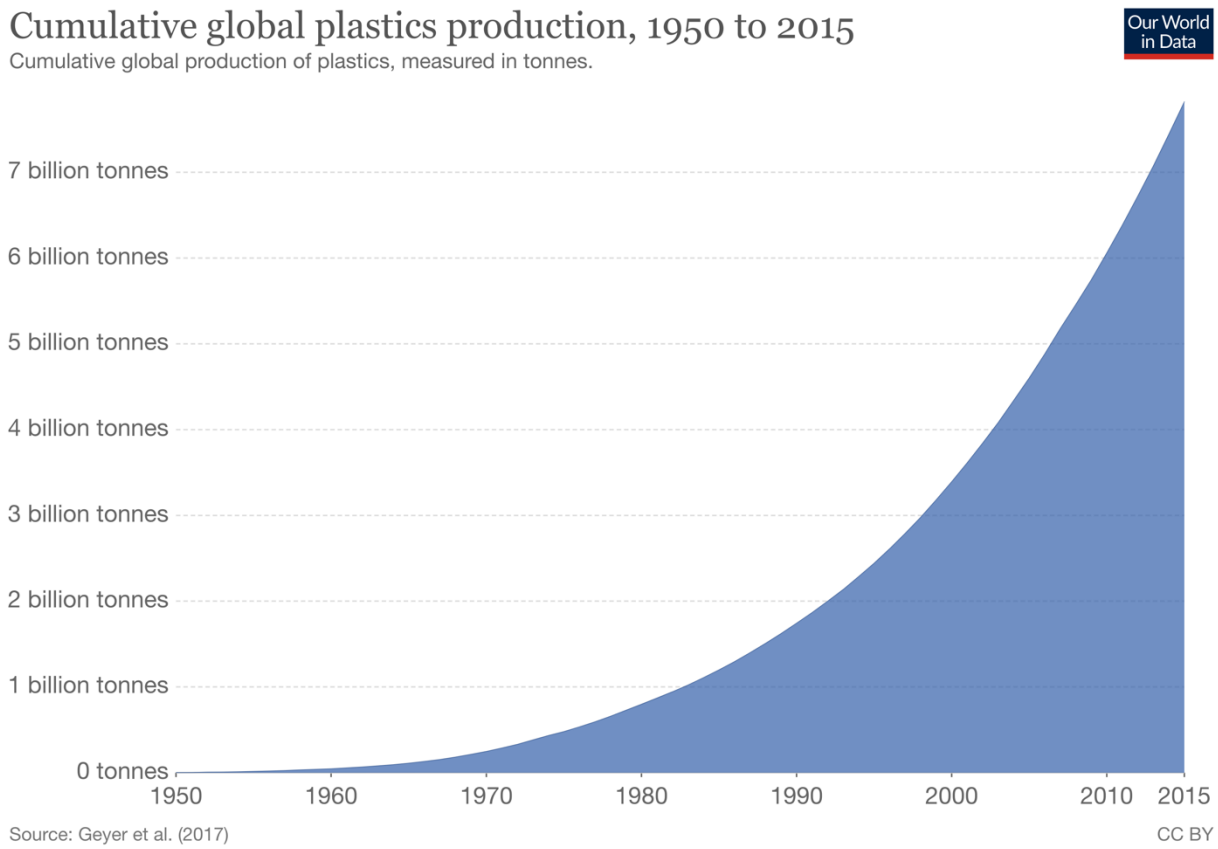
Appendix

Next Steps

- Kick off pre-consumer composting program (delayed due to coronavirus)
- Perform waste audits of compost
- Gather metrics to monitor compost and waste
- Develop programs to study compost that is generated on campus
- Develop campus outreach initiatives to enhance composting education
- Maintain other sustainability efforts such as improving recycling and eliminating plastic on campus

The Problem with Plastic

Response to Mark Stephen's "Why Bioplastics are Causing a Headache."



Bioplastics is a booming industry with an average annual growth of 25% as of 2015, and an estimated annual production of 884,000 tons in North America alone in 2020 (Stephen). The increased production of bioplastics in the last half-decade has been spurred on by the images of a world littered with plastic. After all, "In North America — only about 30 per cent of PET bottles are collected for recycling in the U.S., 31 percent in Canada" (Stephen). Equipped with these

images and the evidence of plastic harming the environment, it is natural to conclude that bioplastics such as PLA are advantageous to PET plastics that do not biodegrade – however, this is not always the case. There are several issues with bioplastics that make them a substantial problem for recycling and composting.

The issues begin with the materials. To recycle and compost and yield a useful material is a difficult task to begin with. But the composition of bioplastics differs greatly. This makes it extremely difficult to sort bioplastics and ensure they end up in the proper disposal stream. Many facilities are not equipped to deal with the array of materials and bioplastics end up being processed with petroleum-based plastics. Stephens uses the Coca-Cola PlantBottle to demonstrate the situation, "The problem is exemplified by the PlantBottle, a part-bioplastic/part-PET product developed by Coca-Cola. The bottle is designed to integrate seamlessly into existing PET streams. But when it comes to recycling the product, consumers have to be careful not to mistake the PlantBottle symbol for one that indicates a biodegradable plastic like PLA and put it in a municipal compost facility" (Stephen).

Issues with bioplastics extend beyond the confusing materials to the costs associated with proper disposal. According to Stephen, the Association of Postconsumer Plastic Recyclers discovered in a study that machinery costs needed to properly sort PLA and PET plastics do not justify the value of plastics to recycling and composting facilities (Stephen). The machinery that is used today is infrared sensors equipped to distinguish between the different plastics. The typical solution to this problem is to sort plastics by hand. However, this is time-consuming and there is still room for human error.

You may be left wondering why it is such a big deal if biodegradable plastics are mixed with recyclable plastics in the recycling stream? Well, Stephen points out that it only takes a few

plastic bottles to be mixed up in composting and recycling streams before there are significant losses usable composting or recycling material. Additionally, from a consumer standpoint the only distinguishing element of a bioplastic is the #7 symbol that is printed on the bottle. However, this means very little to consumers and most people are unaware that this indicates the bottle cannot be recycled. The solution that bioplastics suppliers have taken to address these issues include introducing bioplastics in areas that have limited recycling so they can avoid potential contamination (Stephen).

The difficulties with sorting bioplastics from recyclable plastics poses a significant problem when it comes to introducing a post-consumer composting program at Lehigh University. As it stands, the University uses recyclable plastic bottles and there are no bioplastics available on campus. And having only recyclable plastics is already causing problems on-campus. First of all, it is difficult to ensure the education of the student body with regards to what can and cannot be recycled. It is even more difficult to ensure that every student adheres to proper recycling practices. Introducing a post-consumer composting program would require even greater education and motivation of the student body to minimize the contamination of recycling and composting streams. In all you can eat dining locations, the University must ensure that everything available to eat is compostable, otherwise it will be nearly impossible to avoid contamination of composting.

Complete Composting Interview with Lauren Sleeger

Q: The biggest thing I am trying to work on is overcoming some of the challenges to a pre-consumer composting program at Lehigh. I am wondering if you could tell me about some of those challenges.

A: Our challenges are not really within the university itself, it's within the community and where composting is as far as the challenges after it is collected. One of the challenges we have is contamination which is an issue across the board because there are different issues with companies and the amount of contamination that is accepted. This means we have to ensure the education of our staff. This is why we are beginning with a pre-consumer pilot because there is even an issue with recycling when it comes to the University population. So, the contamination factor is an issue. And then again, the dialogue has switched to reduction instead of composting or recycling because there is another issue in which diversion has created another monster. All the news is all the trash in the ocean. Those are the biggest operational issues. Space is an issue to some degree because you need large containers. They can become very offensive odor wise. So, some of the biggest problems we had when we tried composting 6 years ago were [facilities] would only collect the composting once a week and it would freeze in the winter. That was an issue that has not been resolved. The compost bins cannot be left inside because of odors and because it is degrading, so it has to be outside so how do you combat the freezing. The other issue for us was finding a partner that would accept our compost and that is what caused us to stop composting in the first place. All of the compost in the area was sent to a facility in Wilmington, DE, but all of the contamination and the complaining from the neighbors caused the facility to shut down. This had a massive impact on the tri-state area. So, another thing to think about is the carbon footprint associated with hauling all of the composting all the way to DE. For the last five years, everybody in this area has

been struggling to find a solution. Recently, Katharine and the Sustainability Office have found a partner so we can get up and running again. Years ago, everything was going smoothly. We have been trying relentlessly to find a solution and that is why we went to the biodigester. In the interim, we wanted to find some solution to all of the waste that we were generating and that is what led us to the EnviroPure System. Speaking of the EnviroPure System: the greywater from the EnviroPure system can be used for landscaping purposes but this is not the direction the University is going in at the moment.

Q: Does composting pay-off in terms of carbon footprint and its benefits?

A: There is a formula to determine the impacts of composting and that is something the Office of Sustainability should have.

Q: If this pilot program is successful, how would you like to see it expanded on campus?

A: Well, our goal is to divert as much of our organic waste as we possibly can or all of our waste if possible. Pre-consumer versus post-consumer waste are two entirely different entities and have to be addressed in very different ways. Prior to the conversation we were having earlier was about food waste from the post-consumer perspective and how challenging that is to tap into the mind of a current student and connect how significant their personal actions are as it relates to food waste. A lot of what we do behind the scenes is already well established and we look at our options to reduce waste, it is mostly the post-consumer that poses more challenges. As far as expanding it, our goal would be to have it in each location so that smaller units that don't have the opportunity to have a biodigester can have a composting opportunity. So, Global Cafe, how many bins do they need on a weekly basis? And that is data that we have from our previous program. All they are is 55-gallon trash tubs and depending on the hauler they would pick them up and drop them off, etc. But that is something that you can have in a smaller location as opposed to the biodigester. I am a big believer in combining composting and the biodigester because the biodigester minimizes carbon footprint, labor, and accidents. Once a plate is wiped clean, we never

touch it again. When you are composting there are many steps that require labor and additional expenses such as those from the hauler. The biodigester takes all of those things out of the equation. You pay up front for the equipment and then it will steadily pay itself off, which it already has. Not all of our locations can have a biodigester so there is a great opportunity for composting, which a lot of people think is a better path.

Q: Are the financial challenges associated with composting worth it to the University?

A: Yes, it is something the University believes in wholeheartedly. It was really devastating to a lot of our departments when the opportunity to compost was no longer available. So, it does not pose an issue as far as not getting support. I think sometimes the dialogue with the students is we are not doing it because we don't want to do it. That could be not farther from the truth. We are not finding the partners that allow us to do it. When you deep dive into the issues that are impacting our trash, whether it's recyclables or organic waste, we are in a transitional period right now. We are trying to deal with these issues as best we can, as quickly as we can but the idea that we do not want to solve these issues could not be further from the truth. Now the post-consumer side is going to be another ball game. We have an issue with educating our students on what can and cannot be recycled. Now, all of the sudden we enter composting into this equation. At Lehigh, this has to be something that the students want as much as the administration. The administration really wants it, but the student's own actions have to reflect that desire and the ability to properly compost. In many ways when a student walks into a dining facility, it is a time to decompress. So being told you have to do all of these different things is counterintuitive. You just want to chill. And that is what we want it to be, a place where you can let your hair down and relax. So, there is another side to these issues in which we need to get students engaged in these issues. That for us is such a big task and it is going to take all of us to do it. I am always interested when talking to students, what are your suggestions to reach the students? Our brains are thinking differently than yours, and we rely on students to tell us how to make the change. We know what works for us, but we are not students, we are grown-ups.

Q: How can we bring attention to a pre-consumer composting program and make sure students are aware of these efforts?

One of the things that I did was create the sustainability wall, which is a wall outside the dish room that has information about all of our efforts. I don't always necessarily know. Would videos on YouTube or social media that show us in action be beneficial? Tabling, next week we have our food waste display but is that effective? In years past we have done articles in the Brown and White which have highlighted some of our initiatives. This year there has been so many other issues going on that the Brown and White may have their hands full. But, I am open, we are open. Do you have an idea? It seems like anything we try to do is not enough or not cohesive enough and those that are interested seek it out and those that are not interested do not seem to care. So, we are trying to reach that middle ground. Some people will generally never care. Some people will always care. It is the middle we really want to reach. I cannot tell you how many meetings I am in with Sodexo and administration and I can tell you it really comes down to the students and their awareness. Some of the other things we have tried are guerilla marketing so putting information in students' faces in more unique ways. We are not an activist style university which is fine by me, you guys create change in different ways. It is not a political school; it is a change school and we have to target that. Somehow, I feel like there is a separation that I would like to break through from your classes. Talking to how many students are involved and interested in sustainability and how that connects to what we do, it feels like there is a division there. And there shouldn't be. If you are interested in a field like sustainability, how can you make that one of your main focuses? My gut, I feel like there is a way we can really tie this together. Maybe with Engineers Without Borders, how do we connect on a different level all of these courses and clubs and get everyone in the same room so we can have a dialogue on sustainability. One thing we are going to be doing is the creation of a Lehigh University Food Purchasing Policy. There will be surveys and focus groups that will go out to students and faculty. This can be broadened, and the sustainability office is working on this as an opportunity to get access into many different groups and entities and get an understanding for what sustainability should

be at Lehigh. Then there is the question of how do you get students to answer surveys? Maybe it is giving away free stuff or dining dollars. There are many things that can be done, and it is a matter of what will work here. Every university has its own personality in its own way. For me it seems like everyone does their own thing and we don't unify enough. No easy answer but these are important conversations to have. Do you have any ideas? We do things like social media and earth day fair, but we don't connect to different organizations and classes to really connect all of these different entities. Sustainability has become so much more than reducing our carbon footprint, so if we brought everyone together that would be a tremendous thing. I feel like we miss out on so many people because they are not eating sustainably all the time. Today, sustainability is a blending. Find what you are passionate about and deep dive into that. The perception is you have to purchase organic all the time or you have to recycle everything, or you are not included. That is not the future. Sustainability is important to many different people in many different ways and all of that is great. We need to encourage that, and we need to see more of that on campus.

Source: https://www1.lehigh.edu/community/contact

End Remarks

A special thanks to Professor Karen Pooley, Lehigh's Sustainability Director Katharine Targett, Manager of Rathbone Dining Hall Lauren Sleeger, and Don Pasda from Facilities for guiding me and assisting me with any questions throughout the semester. Throughout this project, I learned that Lehigh is a leader in sustainability and continues to push the envelope through a variety of initiatives. Still, there is a long way to go to create a future that is fair for everyone. Getting to this future requires engaging the community, setting goals, and working to accomplish those goals.